

ABSTRACT

An imager includes an array of imager cells coupled to a multi-mode controller. The multi-mode controller includes circuitry that implements several modes of operation, including a high-light mode, a low-light mode, and a Snap mode. The high-light mode provides charge accumulation in a photoreceptor potential well, a readout potential well, and a sense node potential well. The low-light mode provides charge accumulation in the photoreceptor potential well constrained by an integration potential well. The Snap mode of operation simultaneously transfers accumulated charge for a set of the imager cells to their sense nodes. In addition, the multi-mode controller may select one of a plurality of V+ integration voltages for setting up a selected charge capacity in one of the imager cells. Thus, the V+ integration voltage may be increased to provide charge capacity to address increased light levels. The imager thereby provides low noise characteristics and is configurable for a wide range of charge capacity, for a wide range of light levels, as compared to conventional imager cell implementations.

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